In typical *Psacalium peltatum* (H. B. K.) Cass., as represented in the U. S. National Herbarium by *Pringle* 3340 and *C. & E. Seler* 1259 from the vicinity of Patzcuaro, Michoacan, the type locality, the inflorescence and involucre are densely villous with many-celled, loosely spreading, eglandular white hairs. In Pringle 9871, from Cuernavaca, Morelos, which Rydberg[2] has referred to *P. peltatum*, the inflorescence is pilosulous or villosulous with shorter hairs containing much purplish coloring matter but without evident terminal glands. In the very closely allied and probably not specifically distinct *P. argutum* Rydb., from Durango and San Luis Potosi, the pubescence is much as in *Pringle* 9871, but perhaps shorter and stiffer. Although the difference in pubescence between var. *adenophorum* and typical *P. peltatum* would ordinarily indicate specific distinctness in this group, it is apparently not reinforced by any other distinctive characters, and the form collected by Dr. Muller seems, on the whole, best regarded as of only varietal rank.

[2] Bull. Torrey Bot. Club 51: 373. 1924.

ZOOLOGY.—*Are "frontoparietal" bones in frogs actually frontals?*[1] THEODORE H. EATON, JR., Cornell University. (Communicated by C. LEWIS GAZIN.)

Recently the writer (1939) showed that in *Rana clamitans*, *Hyla regilla*, *Bufo californicus*, and *Scaphiopus hammondii* the so-called "frontoparietal" bones each develop from a single center of ossification instead of from two, as stated by W. K. Parker (1871) for *Rana temporaria*. Parker's opinion, which has been repeated by many writers, was that the anterior center represented the frontal, the posterior the parietal; hence the compound name for the adult bones. He also (1876) speaks of the "frontoparietals" as being "double bones" in *Bufo vulgaris*.

Since 1939 I have found that in *Pseudis paradoxa* (Figs. 1–4), *Rana esculenta* (Figs. 5–7), *R. temporaria* (Parker's species; Fig. 8), and *Dendrobates auratus* (Fig. 9) these bones develop from single centers, just as in the four types described previously. Cleared larvae of *Rana catesbeiana* and two late larvae of *R. aurora draytonii* that I examined also agree with these.

The apparent reason for Parker's statements and figures is this: Under a dissecting microscope the wet, illuminated surface of each "frontoparietal" at an early stage reflects an anterior and a posterior ring of light where it bulges over the forebrain and midbrain, respectively. These rings correspond with the edges of Parker's "frontals" and "parietals," but they indicate only convexities, not separation. Sometimes there are circles of melanophores (Fig. 8), giving the same illusion.

The fact that no exception is found among these several genera, and even in Parker's species, to the rule of development from *single* sliverlike centers of ossification suggests that this method may be universal in Salientia and that no evidence exists to warrant the term "frontoparietal."

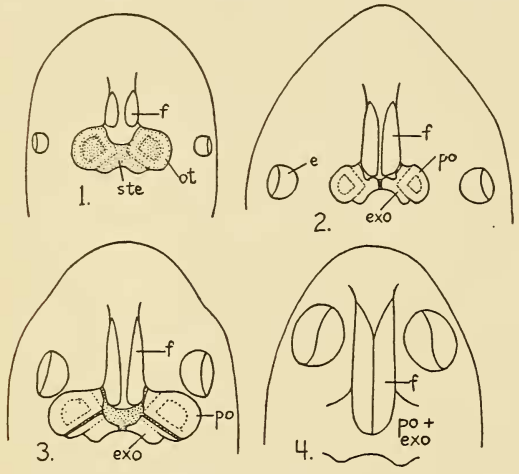
Another statement by Parker (1877) is the following, called to my attention by Prof. E. L. Rice, of Ohio Wesleyan University: "In the small frog, *Pseudis paradoxa* . . . the parieto-frontals arise as one bone on either side, and are subsequently segmented into parietal and frontal." The series I examined, however, verifies only the first half of this sentence. There was no trace of subsequent segmentation (Figs. 1–4).

In *Pipa parva* the right and left "frontoparietals" fuse in the median line, making a single broad plate over the brain, even in larvae in which the legs are not yet well developed (for example, head–body length 15 mm, tail 25, foreleg 3, hindleg 9). In my series, unfortunately, no younger stages were available.

The general scheme of development of these bones in Salientia, then, is as follows: They first appear, one on each side, above the lateral wall of the cranium, fitting the depression between cerebral hemispheres and optic lobes; this is in half-grown or slightly older larvae. Extending forward and

[1] Received November 29, 1941.

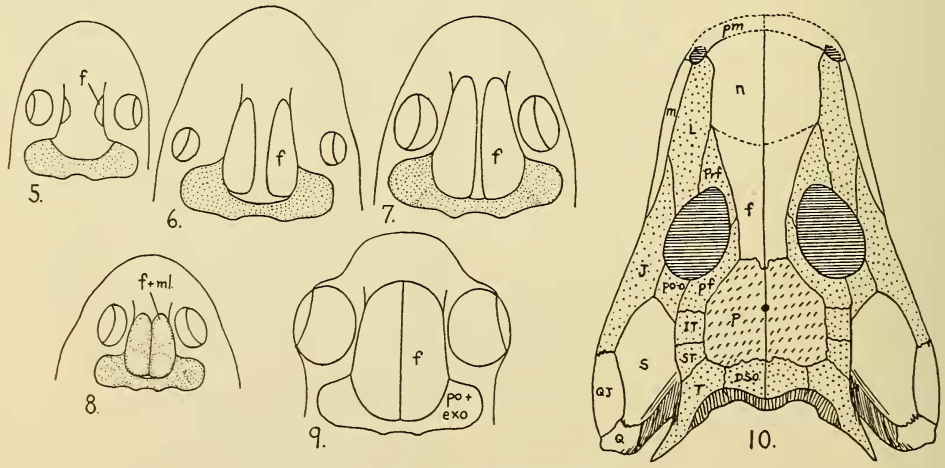
back they reach the ethmoid cartilage and synotic tectum, partly overlapping each. This stage, in which they are slender, widely separated strips of bone, is passed



Figs. 1–4.—*Pseudis paradoxa:* 1, Larva (148 mm, head–body 54 mm, hindlegs minute), dorsal view of cranium, stippled parts cartilage; 2, neotenic larva (188 mm, head–body 64 mm, legs large); 3, transforming (140 mm, head–body 44 mm, hindlegs large, one foreleg out); 4, adult head-body 53 mm).

in the late larvae of most species, but in *Hyla* and *Pseudacris* it is retained in the adult. With most genera, as *Rana*, *Bufo*, *Pseudis*, *Dendrobates*, and *Scaphiopus*, the "frontoparietals" spread to meet in the median line at or before transformation, but a permanent suture remains. Only in *Pipa*, of the types I have seen, does this suture disappear.

The next question concerns the homology of these bones. As the Salientia are in all probability derived from early labyrinthodonts, we may to advantage compare the frog skull with that of the Carboniferous *Paleogyrinus decorus* (Fig. 10). The Salientia lack most of the dermal roofing bones, those that are stippled in the figure. This loss affects two regions, the orbital and temporal, and may be correlated with (*a*) shortening of snout with relative enlargement of eyes, and (*b*) dorsomedial spread of the area of origin of the temporal muscles, which in a labyrinthodont filled a narrow space beneath the roofing bones, lateral to the wall of the cranium. In the posterior part of the skull a frog retains no dermal bones except the quadratojugal and squamosal, both of which lie entirely lateral to the jaw muscle origin on the prootic. Postorbital, postfrontal, intertemporal, supratemporal, tabular, and dermosupraoccipital are missing. Since these extend around three sides of the parietals in *Paleogyrinus*, it is highly probable that the latter also atrophied in response to the same influence, leaving the frontals to extend somewhat posteriorly as



Figs. 1–7.—*Rana esculenta:* 5, Larva (32 mm, head–body 16 mm, short legs); 6, larva (63 mm, headbody 25 mm, short legs); 7, transforming (21 mm, head–body 15 mm, four legs, tail stump.)
Fig. 8.—*Rana temporaria:* Late larva (57 mm, head–body 22 mm, hindlegs 21 mm).
Fig. 9.—*Dendrobates auratus:* Late metamorphosis (head-body 14 mm).
Fig. 10.—*Paleogyrinus decorus* (adapted from Watson, 1926, fig. 13):
Stippled bones are those absent in frog skull.

the snout shortened and eyes enlarged. For these reasons, in the absence of any developmental evidence in modern frogs, it appears likely that the "frontoparietals" are frontals only.

For the use of specimens in this study I wish to thank Dr. Arthur Loveridge, Museum of Comparative Zoology (*Pseudis paradoxa, Rana temporaria,* and *R. esculenta*); Dr. C. M. Bogert, American Museum of Natural History (*Pseudis paradoxa*); Mr. Edgardo Mondolfi, Caracas, Venezuela, and Dr. Doris M. Cochran, U. S. National Museum (*Pipa parva*).

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ABBREVIATIONS FOR FIGURES

dso = dermosupraoccipital
e = eye
exo = exoccipital
f = frontal
f+ml = frontal with rings of melanophores
it = intertemporal
j = jugal
l = lacrimal
m = maxillary
n = nasal
ot = otic capsule
p = parietal
pf = postfrontal
pm = premaxillary
po = prootic
poo = postorbital
prf = prefrontal
q = quadrate
qj = quadratojugal
s = squamosal
st = supratemporal
ste = synotic tectum
t = tabular

ICHTHYOLOGY.—*Notes on some fishes from the Gulf of California, with the description of a new genus and species of blennioid fish.*[1] LEONARD P. SCHULTZ, U. S. National Museum.

Among some fishes sent to the United States National Museum from the Gulf of California, a blennioid fish was found to be undescribed and other species are worthy of report. The author wishes to thank E. F. Ricketts for sending these specimens in for study.

Hypsoblenniops, new genus

After studyin the fishes related to *Hypsoblennius* and Herre's description of his *Spinoblennius* (Herre, Field Mus. Nat. Hist. Publ. Zool. **18** (12): 435. 1935, type *S. spiniger;* Herre, *ibid.* **21**: 399, fig. 39. 1936), along with a paratype of *S. spiniger* kindly sent from the Field Museum to the United States National Museum, I have considered it best to propose a new genus for this little blenny from the Gulf of California.

Genotype: *Hypsoblenniops rickettsi,* new species.

Named *Hypsoblenniops* in reference to its relationship with *Hypsoblennius.*

This new genus is close to *Hypsoblennius* Gill and *Spinoblennius* Herre but differs from the former in having the preopercle armed with three strong spines, one at the lower angle and a smaller one above and another below that spine, and from the latter in having three slender, pointed preopercular spines instead of a single flat one at the lower angle.

A simple tentacle about $\frac{1}{3}$ to $\frac{1}{2}$ diameter of eye occurs on its upper margin. All cirri are said to be lacking in *Spinoblennius spiniger* Herre, but an examination of one of his paratypes shows a small, simple ocular tentacle, its length about $\frac{2}{3}$ the pupil. The anterior nostril near front of eye is tubular, with a very small cirrhus on its dorsal margin in the new species but rudimentary in *Spinoblennius,* though said in the original description to be lacking.

[1] Published with the permission of the Secretary of the Smithsonian Institution. Received December 26, 1941.